

REMARKS

Claims 55-82 are pending. Favorable reconsideration is respectfully requested.

Applicants would like to thank Examiner Wood for the helpful and courteous discussion held with their representative on September 14, 2004. During the discussion, Applicants' representative informed the Examiner that a certified English translation and a Terminal Disclaimer would be submitted to overcome a portion of the references cited in the Official Action. In addition, potential amendments to overcome the obviousness-type double patenting rejection over U.S. 6,579,153 were discussed. The following remarks expand on the discussion with the Examiner.

The rejections of the claims under 35 U.S.C. §102(e)/§103(a) over U.S. 6,579,153 to Uchikura et al. are believed to be obviated by the submission of certified English translation of the Japanese priority application JP 2000-098094 (JP '094). Applicants submit that the claims of the present application are entitled to the March 31, 2000 filing date of JP '094.

In contrast, Uchikura et al. issued as a patent on June 17, 2003 from an application filed on January 9, 2001. Since that date is subsequent to March 31, 2000, Uchikura et al. is not available as a reference under 35 U.S.C. §102(e)/§103(a). Accordingly, withdrawal of this ground of rejection is respectfully requested.

The rejections of the claims under 35 U.S.C. §102(e)/§103(a) over U.S. 6,582,761 to Nishimoto et al. are believed to be obviated by the submission of certified English translation of the Japanese priority application JP '094.

Nishimoto et al. issued as a patent on June 24, 2003 from an application filed on November 21, 2000. Since that date is subsequent to March 31, 2000, Nishimoto et al. is not available as a reference under 35 U.S.C. §102(e)/§103(a). Accordingly, withdrawal of this ground of rejection is respectfully requested.

The obviousness-type double patenting rejections over co-pending application serial No. 10/200,504 and U.S. 6,447,695 are believed to be obviated by the executed Terminal Disclaimer submitted herewith. Accordingly, withdrawal of these grounds of rejection is respectfully requested.

The obviousness-type double patenting rejection over Claims 7-32 of 6,579,153 (U.S. '153) is respectfully traversed, for the reasons discussed below.

(1) Claim 55

Claim 7 of U.S. '153 specifies a heterocyclic compound as an essential component and the patent recites 7-hydroxy-5-alkyl-1,3,4-triazaindolizine in Claim 11 as "a heterocyclic compound with a heteropentacycle, with no benzene ring forming the skeleton, and with a functional group". Moreover, U.S. '153 also discloses benzene triazole (in Claim 14) and quinaldinic acid (see Claim 15).

On the other hand, "a heterocyclic compound with a heteropentacycle, with no benzene ring forming the skeleton, and with a functional group" recited in Claim 55 is exemplified as 2-amino-1,3,4-thiadiazole, 1H-tetrazole-1-acetic acid, and 5-alkyl-1,3,4-thiadiazole-2-thiol or the like, which does not include 7-hydroxy-5-alkyl-1,3,4-triazaindolizine, disclosed in U.S. '153. Moreover, for the other heterocyclic compound, Claim 55 does not include the benzotriazole and quinaldinic acid which have been disclosed in U.S. '153.

Moreover, Claim 55 refers to a method in which a working film composed of copper film or an alloy composed of copper and at least one other metal is efficiently polished, and the polishing rate of the film ranges from 1220 to 3780 Å/min (see Tables 1-4).

On the other hand, Claim 7 of U.S. '153 is directed to a method of forming a damascene wiring (embedded wire), and the object is to appropriately select the polishing rate ( $R_{CU}/R_{BM}$ ) between a barrier metal which has been formed on the insulating film and the

copper film. In general, the polishing rate of the barrier metal layer is slower because the barrier metal is solid. Therefore, in order that the polishing rate of the barrier metal and the copper film is made appropriate, it is necessary to reduce the polishing rate of the copper. For that reason, there has been no description in Claims 7-32 of U.S. '153 of the polishing rate specified in Claim 55 of the present application.

It should be noted that in the Examples of U.S. '153, the polishing rate of the copper film has been referred to as the polishing rate ranging from 5 to 1140 Å/min (see Tables 3-5 of U.S. '153). Except for the polishing rate 1140 Å/min of the copper film in Example 16 of Table 4 of U.S. '153, the polishing rate in the Examples of U.S. '153 range from 5 to 750 Å/min. Consequently, these values are extremely slow when compared to the polishing rate recited in Claim 55 of the present application.

(2) Claims 56 and 57

Although Claim 7 of U.S. '153 recites an oxidizing agent as an essential component, none of the claims of the patent specify either the identity or the content of the specific oxidizing agent. On the other hand, the oxidizing agent set forth in Claims 56 and 57 of the present application is hydrogen peroxide or ammonium persulfate, and the content ranges from 0.05 to 0.5 weight parts. See Tables 3-5 of the Examples.

It should be noted that in the Examples of U.S. '153, there is a description of hydrogen peroxide and potassium persulfate as an oxidizing agent, and the content ranges from 0.5 to 1.5 weight by percent. When compared to the oxidizing agent set forth in the present claims, that content is higher.

(3) Claims 58 and 59

Claim 7 of U.S. '153 specifies an organic acid as an essential component. The specific organic acid and the amount thereof are recited in Claim 18 of the cited patent. The organic acid set forth in that claim is maleic acid, and the content ranges from 0.005 to 1

mole/L. When the content is converted into weight by percent, it ranges from 0.06 to 11.6 weight by percent (see the specification of U.S. '153 at column 10, lines 48-53). Moreover, in the Examples of U.S. '153, maleic acid, malonic acid and succinic acid have been disclosed, and the content ranges from 0.5 to 2 weight by percent.

On the other hand, the present claim contains ammonium malonate or potassium malonate as an organic acid salt and the content ranges from 0.5 to 1 weight part. Thus, the content is comparatively lower when it is compared with that claimed in U.S. '153.

(4) Claim 66

Claim 7 of U.S. '153 specifies an oxidizing agent as an essential component. Claim 66 of the present application recites an oxidizing agent. However, in the claims of U.S. '153, the identity and content of the oxidizing agent is not specified. As set forth in section (2) above, the oxidizing agent of the present claim is hydrogen peroxide or ammonium persulfate, and the content ranges from 0.05 to 0.5 weight part, and the content of the oxidizing agent of the present claim is low.

(5) Claim 74

In Claim 74, the aqueous dispersion does not contain a surfactant, the pH of the aqueous dispersion ranges from 8 to 8.5, and the polishing rate of the copper film ranges from 1220 to 3780 Å/min.

In the embodiments of U.S. '153 where a surfactant is not used, the pH of the aqueous dispersion ranges from 9.4 to 10.2 (see Table 4 of U.S. '153), which is higher as compared to the pH recited in Claim 74. In addition, the polishing rate of copper ranges from 5 to 15 Å/min in that embodiment, and when it is compared with the polishing rate of Claim 74, it is extremely slow.

(6) Claims 60, 61, 77 and 78

These claims are not obvious over the claims of U.S. '153 for the reasons set forth in section (3) above.

(7) Claims 75 and 76

These claims are not obvious over the claims of U.S. '153 for the reasons set forth in sections (2) and (4) above.

In view of the foregoing, withdrawal of this ground of rejection is respectfully requested.

The rejection of Claim 11 under 35 U.S.C. §112, second paragraph, is believed to be obviated by the amendment submitted above. Claim 11 has been canceled. Accordingly, withdrawal of this ground of rejection is respectfully requested.

Copies of the Information Disclosure Statements filed on July 2, 2001, July 9, 2001 and October 10, 2001 are submitted herewith for the Examiner's consideration.

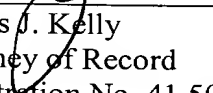
Applicants submit that the present application is in condition for allowance. Early notice to this effect is earnestly solicited.

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